TEXTILE BULLETIN

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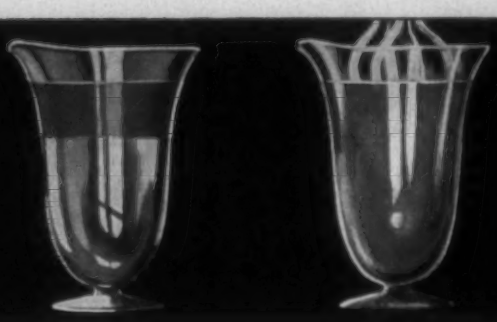

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TEXTILE BULLETIN

VOL. 49—No. 4 SEPTEMBER 26, 1935

The Future of the Textile Industry In New England

By Fred W. Steele

General Manager, Grinnell Manufacturing Corporation, New Bedford, Mass.

In this article Mr. Steele discusses several factors that have contributed to the steady decline in cotton manufacturing in New England. Southern manufacturers will hardly agree with his statement that lower wage rates in the South have been the chief factor in the inability of the New England mills to meet Southern competition. Whether you agree with Mr. Steele's view or not, his discussion of the New England situation is very interesting. His views were presented in an address at Wellesly College.—Editor.

In presenting to you my views on the future of the New England Cotton Textile Industry, I should like to emphasize the fact that I am neither a prophet nor the son of a prophet. During the last few years the industrial picture in the United States has changed with such startling frequency that any attempt on my part to foretell the future without wide qualifications would, indeed, be rash. It is possible, however, to draw certain definite conclusions from the events of the past and present which may be construed as having a definite bearing on the future. This I will try to do.

No description of the present status of the New England Cotton Textile Industry would be complete without some general references to the influences, events and conditions of the past. Many forces have played parts in developing the present status of the industry. The cotton textile industry of the United States had its origin in the latter part of the Eighteenth Century when the first mill was built in Rhode Island. It is interesting to note that even in those days England maintained a jealous watch over its home industries and frowned on competitvve developments abroad. We have been told that Samuel Slater, the young Englishman who designed the first textile machinery in this country, was forced to draw on his memory for plans, because he was not allowed to take with him from England any designs of this machinery. Situated in the valleys of Rhode Island where swift flowing streams provided water power with which to turn the wheels of machinery, the industry spread gradually to other New England States. For more than a century growth was healthy and continuous. Before the outbreak of the Civil War a sizable export trade had been developed.

The New England Cotton Textile Industry maintained progress, both in home and foreign markets, until well after the start of the Twentieth Century. Massachusetts had already attained leadership in this growing industry. Fall River, New Bedford, Lowell, Lawrence, as well as many smaller communities in this State, became well and favorably known in the textile markets of the world. Other New England States had textile communities that hummed with activity. The future for a long time seemed assured.

About twenty-five years ago the cotton textile industry of our Southern States began to assert its ascendancy. As the years passed, the growth of the Southern branch of the industry developed into a real threat for New England, and about 1926 the Southern States displaced New England leadership in cotton manufacturing. This ascendancy continued, until today there are approximately twice as many spindles in the South as in the North. Therefore, the problem for New England is to hold what remains; thoughts of expansion at this time are absurd and futile. New England must struggle to hold what she has.

Perhaps a few figures will help to clarify the geographical development of this industry in this country. The World War, with its extraordinary demand for cotton fabrics of all kinds, led to further development and growth in both sections of this country. In 1926 there were 18,182,000 spindles in place with 13,977,000 of them active in New England mills. On the other hand, the Southern States in the same year could show 17,755,000 spindles in place with 17,176,000 of them active; in other words, while New England retained its leadership in the number of spindles in place, the South had passed it in activity. Active spindles are what count. Payrolls cannot be met with the non-existent products of idle machinery. Bringing the foregoing figures up to date, we find that in January of the present year, there were in New England 10,495,000 spindles in place, but with only 6,972,000 of them in operation. For the South the figures show a substantial increase insofar as leadership in this country-wide activity is concerned. In January of this year, the Southern States had 17,411,000 spindles in operation out of a total of 19,360,000 in place.

All of these figures were taken from the statistics of the Federal Census Bureau. What do these figures mean?

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Master Mechanics Meeting In Gastonia

A VERY SUCCESSFUL and interesting meeting of the Master Mechanics' Division of the Southern Textile Association was held in Gastonia, N. C., on September 20th.

L. W. Misenheimer, chairman, led the discussion and developed some very valuable information on a number of important subjects.

L. M. Kincaid, master mechanic at the National Weaving Company, Lowell, N. C., was elected chairman to succeed Mr. Misenheimer, whose term expired with this meeting.

Following the meeting, those present were guects at a lunch sponsored by a number of textile machine shops of Gastonia.

Due to the length of the discussion, all of it cannot be published this week. The remainder will appear next week.

The report of the discussion follows:

Chairman: The first question is: *"How many pounds of steam can be generated from a pound of coal?* I would like to ask Mr. Spencer to start off that discussion.

Charles A. Spencer: The pounds of steam per pound of fuel mostly depends upon the kind of plant and the condition of the plant. Taking a public service equipment plant, why your evaporation would probably run around 12 or 13 pounds per pound of fuel of steam. Some other plant might run around six or seven pounds of steam per pound of coal. So, the condition and the kind of equipment you have, why that would bring about the amount of evaporation you have.

In our plant we fire two boilers and they are hand-fired furnaces, and our evaporation runs anywhere from an average of nine and a half to 10 pounds of steam per pound of fuel burned.

S. K. Lineberger: We have a modern plant about two years old. We get very good evaporation, it runs from 10 to 30, and it has been as high as 10.70 on Kentucky coal.

In discussing evaporation of a boiler plant you have to consider everything you have. If you do you take into account the feed water heaters and everything in that way, as it all has got to be included in your discussion. And I haven't come prepared for a discussion of that kind.

Chairman: I know we all have different conditions in our several plans to arrive at these evaporations, but the thing I want to bring out is that you men with modern plants can show up men that possibly don't have a modern plant and perhaps by modernizing our plant we might save money on evaporation. Now, as you all know that largely depends on the temperature on your feed water. I would like to know how many men here have 212° feed water temperature or more in the boiler. Raise your hands; I want to count them up; one, two, three, four, five. That is, 212° and more now. Now, how many with boiler feed temperature under 212; one, two, three, four.

One thing is very important, if you are not getting as much as 212 degrees temperature in your feed water, it is going to knock your pounds of steam per pound of coal away down. It is very essential in any plant to get your feed water temperature just as high as you possibly can handle it with your pumps. I understand that many are not being able to see where they can get that, but where it is possible it is a good investment to you and to your future, to maintain a high temperature in feed water.

FEED WATER CHART

Now I want to show you a chart here that I took yesterday, a recording chart off of our plant, that is 212 to 228, from 6 o'clock yesterday morning until 6 o'clock this morning. That is yesterday's record. Now, we maintain that from Monday morning to Monday morning when we are running our plant. Now, some of you are going to say you can't pump that water 228°. Well, I am doing it and I want you to come down and I will show you I can do it.

I am using my make-up water from a laboratory test, showing that I am using 68½ per cent of my boiler feed as make-up water returned from the plant. I am reclaiming every bit of condensation in my plant that I can possibly get. If you will do that and bring up your feed water temperatures, why you are going to get a good evaporation test.

I will give you one plant record—I have two plants. We have a horizontal return tube to the boilers, 250 h.p. each, with the Huber stoker. And my evaporation yesterday, I have three days here, an average of 922, 892 and 1036, on a horizontal turbine to the zoilers. And my feed water temperature is that. Now, at the print works, we have evaporation that runs from 11½ to 11¾, due to the type of boilers, because it is more efficient and we run this plant around 270 per cent efficiency, whereas we are running the other plant at 225 per cent efficiency. We have plenty of boilers at the bleachery.

Mr. Spencer: Your temperature going to the boilers is 228°?

Chairman: It will go as high as 228, from 212 to 228°.

Mr. Spencer: The temperature on the boiler feed water, that is the water coming from the open heater to the boiler feed pump averages from anywhere about 190 to 212, but passing that water on to the boiler, between the boiler feed pump and the boilers, we have an economizer that consists of cast iron tubes. So you see that is a great saving in absorption there from the heat or the hot gasses in the water, and your entering water in the boiler after passing through this economizer runs anywhere from 240 to 280°.

Chairman:: That is one reason I called on you, I knew you had an economizer and a high temperature of feed water, and that is the point I wanted to get out of you.

Chairman: Mr. Young, can you give us anything along the line of evaporation.

W. G. Young, Albemarle, N. C.: After hearing all this, I feel like a monkey if I try to say anything on this subject. As a matter of information, how do you get the 228° back on your feed water, what means have you got of heating it and just how do you it, do you use any live steam into that at all?

Mr. Spencer: No.

Mr. Young: Do you get all of your make-ups from the heater?

Mr. Spencer: Yes, sir.

Mr. Young: And what sort of pump do you use to put that 228° water, centrifugal?

Mr. Spencer: No, outside pack, reciprocating pump.

Mr. Young: That is a good job, I tell you that.

Chairman: I might explain to you how I have got my feed water arranged. I have two make-up tanks, coming back, I had to do that in order to eliminate steam out of the make-up tank. Out on the side of my boiler room I have a tank mounted, about 15 feet above my feed pump with all my returns coming back to that tank, and it is vented, in the top of that tank I have a perforated pipe to condense all of the vapor that comes in there at that point. My make-up water comes into that tank, then down into the boiler room, at about 112. I have a heater with the V-type water heater in it to register the water, and it comes down from this make-up tank into this heater, then from that heater into my pump. From the pump where it comes through a closed heater into the boilers.

Now, all the steam that I am putting in this closed heater, is exhaust from my feed pump, and we build up the temperature on the extracting side. Also I have on that heater a valve when I am not running the plant, when they are not running much out of the plant and they haven't got much returns, why this thermostat valve automatically opens up and maintains that heat from the extraction from the turbine. It will hold that temperature up to 212 or more.

Mr. Young: That is a good job.

I would like to know about what the minimum height of a Webster heater, whatever heater you might use for elevation that you could pump that water up to say 228, somewhere along there.

Chairman: My heater is around 18 inches above the top of the highest valve in my pump. I never have measured it accurately, but it is around 18 inches.

Mr. Young: Do you think it would be necessary to have any back pressure on the intake, to use in water of that temperature.

Chairman: No, sir.

Mr. Young: How about with a centrifugal pump or would you use a reciprocating pump in that case.

Chairman: You have plenty of head on it, on the centrifugal or the reciprocating pump. That has been my experience.

Mr. Young: Is it necessary to have an atmospheric valve?

Chairman: Ont the outside tank, I have an atmospheric valve to take care of that.

Mr. Young: I am asking for my own information. I am having to make a change in the boiler room and put in those pumps and I am asking for that information for that reason. I would like to know should I put in a pump with a three-foot head or whether I could get efficiency with a centrifugal pump, and whether it would be absolutely necessary or whether I should have that pressure. I can have that on my Webster heater. That would be a help in my opinion. I would like for you fellows to express yourselves on that matter.

Chairman: Maybe you haven't the required capacity there to take back pressure to hold it down. Is that the case?

Mr. Young: That is probable. Maybe that will come up later in the meeting.

Chairman: The bottom of my heater goes about 18 inches above the top valve in my pump. I had to raise that pump; I raised the pump 28 inches, because it would not handle that water until I did that. The higher you get that heater the better it is for you. If you can get it eight feet, why that gives you a better chance.

Mr. Young: Do you have any back pressure at all?

Chairman: No, sir, not noticeably at all.

Mr. Tindall: We have just gone through what he spoke of. Our returns come from one centrifugal pump, from four mills which are lower than our boiler room. It is pumped from there to another tank in the boiler room and from there it goes to a centrifugal pump on the top of the boiler room which is about 50 feet above the Webster heater. This is controlled by two outside flows, one on the first tank—well, three in the first place; the first being controlled by the flow from the mill to the second tank. Then, we have just installed a new Fisher outside flow, a centrifugal pump, 60 gallons a minute to the upper tank on the ceiling, which is about 40 feet above the Webster heater. We have about five pounds back pressure in this heater. Then it flows from the feed pump to the reciprocating pump. We have just put in a new one. This takes all the feed water from the heater to the boiler and we have about five pounds of back pressure in the heater.

Chairman: We have a V-type water heater in that meter, and it is very accurate because I have checked it time and time again weighing the water afterward. And it is very accurate. And I have had samples taken up there a half a dozen times.

Mr. Tindall: Did you weigh the water before it goes into the boiler?

Chairman: Yes, we get the pounds very accurately from that type of meter.

Mr. Tindall: Do you make allowance for heating the water that you get back, do you make allowance for the heat in that water that is returned?

Chairman: That is something that we get for nothing. It would be going to the outside, or to waste. If you reclaim that, why you are just getting that efficiency back out of that that you otherwise would have to lose. You would have to take colder water and evaporate that. And it would take more pounds of coal to get it.

Mr. Tindall: You would have to heat it to start with, but after you get it started, why you take six or eight and a half per cent in make-up water that is coming back. Well, some of the water that is coming back is around 150 degrees and the other is quite over 200 degrees.

I don't think anybody should be afraid of his temperature in the pump at all up to a reasonable extent. My feed water pump is about 12 feet above the heater. We run the temperature in our heater around 250 to 255. We pump directly from the pump into the boiler. We haven't any economizer of any kind. We maintain the heat in that heater, the returns from the mill, which is returned lower and then is pumped up into the heater. We maintain 15 pounds back pressure on that heater all the time. A part of our returns coming back, especially from the slashers, is just, as he said, evaporated steam, over 200 degrees. After we pump a while up to the theater, we make up in the heater with this back pressure and with that elevation of the pump, you don't have any trouble at all, either with the plunger or with the centrifugal, either one. I don't think he should worry about his pump at all.

Member: I am glad he brought that out. I hate to take the time of this meeting, but I am glad to hear that.

Chairman: That is what we are here for.

Mr. Kincaid: How much water can be pumped around 200 degrees? I want to know about what a pump at that high temperature can do.

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The Future of the Textile Industry in New England

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Briefly, their meaning is that the New England States have definitely—and probably permanently—lost the leadership in the cotton textile industry of this country. This is obvious and indisputable when one notes that the South has much more than twice as many spindles in operation. In terms of mills, it means that while New England had 510 cotton mills in 1923, there are less than 200 today—a loss of more than 300 mills. In terms of employment, it means that whereas there were 209,000 persons actively employed in the New England mills in 1923, there are less than 90,000 so employed today—and many of these are on short time.

A fair question would be: What has caused this geographical change in the cotton textile industry of this country? Inasmuch as human nature is a variable quantity and not subject to the exact laws of mathematics, it is not possible to cover the entire field of causes without getting into an extremely lengthy discussion. However, it is possible to name the leading forces that brought about this great change. Nearness to the source of raw cotton is not and has not been a controlling factor in this change of location within the industry. In a minority of cases, some years back, nearness to the cotton fields did have some slight influence in directing the growth of the Southern cotton textile industry. In more recent years, however, with the center of the domestic cotton-growing region located in Texas and the Mississippi delta regions, low water and rail freight rates to New England have offset whatever advantage the South may have had in earlier times. Other outstanding causes for the decline of the New England cotton textile industry and the constant growth of this industry in the Southern States, are: the discriminatory local taxes and adverse legislation which is not present in those States to which this industry has fled; the misunderstanding between employer and employee—often resulting in unnecessary strikes with tremendous loss to both, as well as to the community at large; but far and above all other causes, lower wage levels.

It seems inconceivable that in this great country of ours there should be such a discrepancy in the labor cost of goods sold in the same common markets—it should always be borne in mind that any change in the cost structure of a cotton mill must be figured with one eye on the market and competitive conditions. Good intentions and the most benevolent of social objectives alone will not meet payrolls or furnish employment. And it should also be kept in mind that reform must be on a National scale, or disaster faces the mill worker and mill community in States where legislators think otherwise. This last statement is just as absolute as the law of gravity and just as sure as that daylight follows dawn.

I should like to state at this point that I have no quarrel with the man or woman who is trying by fair means to better his or her condition in life, but I do say that unless employer and employee, either directly or indirectly, in the near future, can sit down together and discuss any misunderstanding that may arise, business will be forced into that district where more settled conditions prevail. The future of the textile industry in New England rests largely on the willingness on the part of those of us who are left in this industry in New England to cooperate in every way possible, and this not only includes the employer and employee, but his representative—whether it be in city, State or Federal government.

Let me present another point that I think should be of interest to you. There is a popular fallacy regarding the function of industry in the economy of the Nation. It is generally thought of as an adventure of *Capital in pursuit of Wealth*. Although the hope of gain is possibly the only magnet powerful enough to attract capital to industry, capital is but a tool of industry, essential to its existence and indispensable if it is to function properly; so, too, are the raw materials that industry fashions into its products, the machinery it uses for this purpose, the labor it employs, and the market it must find as an outlet for its manufactured products. After all, the whole picture is much like a three-legged stool. In our case, the three legs are made up as follows: one leg represents capital—one leg is labor—one is business; and like the stool, the whole structure is of little value with one of the three supports missing. The conduct of most industries requires an investment of more or less capital. Power and machinery are needed, land and buildings, a revolving fund of money or credit with which to acquire a stock of raw material and supplies, and out of which labor can be paid while the product is being made and until it is sold. When the product is sold, the money received from such sales goes to replenish this revolving fund, usually referred to as working capital of the enterprise. The sale of the products must realize something more than the amount necessary to replace the working capital; the price obtained should promise sufficient reward to induce capital to remain in the enterprise, and even to attract additional capital to it, when necessary for its continuance or its growth. *Capital is apt to work from choice,* while labor must more often than not work from necessity. While therefore it is true that in most cases capital is an essential item in starting an industry and its continued presence is necessary in the conduct of the same, it is only, in the last analysis, one indispensable part of the mechanism of industry and not its purpose or end. It follows, as an inevitable consequence, that when for any reason the industrial activity in a location languishes or is threatened with permanent decay, it becomes a matter of vital importance to the whole community; not only to those directly employed, but to those allied with the industry. Be he merchant, professional man, builder or what have you—each must bear some portion of the loss and consequent privation. You can easily test the truth of this by your own experiences during the present crisis.

Today there are four major problems confronting the cotton textile industry of New England. Opinion differs as to their relative importance, but agreement as to their existence is general. They are: the processing tax; the North-South wage differential; Japanese competition; and over-production. No doubt you have heard much about all of these, but if you will bear with me, I should like to discuss their importance.

Let us take first the processing tax. On August 1, 1933, the cotton textile industry was subjected to the most extraordinary boost in raw material cost it has perhaps ever experienced. Simultaneously, stocks of finished and fabricated cotton goods had their costs raised in similar proportion to the advance of raw material. This marked the imposition at one fell swoop of the cotton processing tax. It is safe to say that seldom in its history has the cotton textile industry been obliged to undertake such a stupendous task in interpreting and adjusting itself to a Federal statute. At the end of the last fiscal year, July 1, 1934, there had been collected in cotton processing and floor taxes, approximately $145,000,000. This enormous total speaks for itself, but it is interesting to note the relation of the 4.2 cents per pound tax to other items of expense in this industry. At the start, it adds about

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Master Mechanics Meeting in Gastonia

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Chairman: Now, I have never used a plunger pump at that temperature, that is pretty high for a plunger pump. But we have never had any trouble with that so long as there was water in the heater.

Mr. Kincaid: How do you get it 250 degrees?

Chairman: With steam heat.

Mr. Kincaid: I want to ask this gentleman over here if he is heating his water with some kind of thermostatic arrangement in the heater to give him the service that he expects.

Member: We have thermostatic control, 200 or 212, I would say. It averages around 205 degrees. I have never tried this 228 degrees and high degrees like that. I have always been afraid of it. Well, we have no way of getting it that hot; unless we use the live steam, we could not do it. And that is as far as I know. I don't know anything about trying to pump any high temperature. I get my temperature from my heater, from my boiler feed pump which is given the turbines. Of course, I lose some of that temperature going to the turbine. And if I haven't got enough steam from the boiler feed pump, why I take the extraction from the turbine.

Mr. Young: We do not have any exhaust in the steam operation at our plant. We do not use any live steam in the water make-up at all. It is from the closed coils and water heaters and various pumps which are around the plant and steam plant.

Chairman: Mr. Spencer, I want to know if you are using your dry can return back to your boilers, your condensation from your dry cans.

Mr. Spencer: In our plant, I guess we have at least 400 dry cans of different sizes, and all returns from that dry can column goes to the tank at its low pressure. Then it comes from the tank to the open heater, then from the open heater to the boiler pump on the way to the boiler.

Oil From Dry Cans

Chairman: Have you ever experienced any difficulty from oil coming back from those dry cans?

Mr. Spencer: Why should there be any oil there?

Chairman: That is just the question. I don't think there should be any, but I just wanted to bring that out. What is your experience, if any?

Member: Well, you have the oil journals on the cans.

Mr. Spencer: Yes, sir, but we are very careful about oil coming back from those journals.

Chairman: Well, that is just the point I wanted to bring out. I have been questioned because there are some engineers who will not use that water from dry cans because they say there is so much danger there of getting oil back to your boiler. Well, now, anybody that is familiar with the dry can construction and the bearings and the packing, I think it is an impossibility for that oil to get in condensation from this standpoint. You have got the pressure of the steam against that oil, blocking it out instead of taking it into the cans, other than that you have three rings of packing in there to prohibit the oil from getting in there. And that is just the point I wanted to bring out here.

Now I was in a plant once where the engineer would not reclaim this dry can oil or that condensation on that ground, because he was afraid he would get oil back to his boiler. And I put it there and the superintendent happened to be in charge of that plant when I went there. He said, "Well, you are now going to blister those boilers if you put it back in there; we have tried that and it will not work." Well, I went ahead and convinced him that it would work and it was quite a saving, and that is just the point I wanted to bring out.

Mr. Kincaid: You folks are talking about this while your plants are running. I would like to ask this question, What would they do if you closed down? What is the possibility there? At least, I know it happened in one plant where it drew in that oil and grease, too. That has happened in several cases, at least.

Chairman: Well, all the cans that I know of, Mr. Kincaid, have a vacuum release valve, two of them on each end; no, two of them on one end of the can, rather. There is usually two valves on each can.

Mr. Kincaid: But most of the vacuum valves that I know about don't operate under two or three inches. And two or three inches vacuum is quite an attraction from the outside.

Chairman: Well now, I would like to say for your benefit, we have traps on each individual can with a vacuum jet to take care of that condensation. And that maintains your vacuum on your return pump, carrying your condensation back to your boiler and when it gets to that trap it will never get into the can. It never goes any further than that because that jet controls it and keeps it out of your cans.

Now, the next question that I have listed here, is the pounds of coal per kilowatt hour. What do you consider a good average for the ordinary average plant? We have the steam generated per pound of coal, now how much water per pound of coal? Now what do you consider a good evaporation?

Hand Fired Boilers

Chairman: Mr. Spencer, you have hand-fired boilers. I would like to know whether or not you are getting out of your plant as much by hand firing as Mr. Lineberger is by his mechanical firing or somebody else who is using mechanically fired plants. I would like to know whether or not you feel that it is paying you.

Mr. Spencer: Some plants, having hand firing, are just as efficient as those who do not, and I will go further and say that some are even more efficient than the semi-stoker fired plants. I will even go further than that and say that they are still better than some of the full-fired mechanical firing plants.

Chairman: I think that is absolutely right. And I think that applies to our own plant. In a master mechanic job, if you don't stay around and keep things going and keep fighting, he is going to get into a terrible hole.

Mr. Spencer: In your steam fired plant, if you get an efficiency of around about 75 or 80 per cent efficiency with a hand-fired plant, and your CO_2 per cent ran from 12 to 14 per cent, why spend the money for semi-stokers? There might be a little saving there in fuel, but you can hardly figure your labor cost in this section of the country because that is pretty low, anything from 25 or 30 cents an hour for labor.

Mr. Lineberger: That is a pretty broad question he has up. You take so many things into consideration. In talking about your efficiency, you have got to know whether you have a process load or whether you are just generating and running full condensing and you have too broad a topic for me to talk about. I am not fixed at this time to give you a talk on the subject.

Chairman: All right, I will send it back to the audience. We have one of our old master mechanics here and I am going to ask him this question. Mr. Fox, what do you think, sir, of the poundage coal per kilowatt hour?

Mr. Fox: The enthusiasm which greets this question leads me to think that there are too many niggers in the

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Answers To Questions On Carding

We are giving below, two more letters that come in answer to the questions on carding asked by "Card Troubles and Anxious." Both of them add some interesting points to the questions.

Editor:

I will give what information I can relative to the questions on carding asked by "Anxious" and by "Card Troubles."

Answer To Anxious

The question about fly waste on card, asked by "Anxious," is hard to answer offhand without knowing the make of the cards, as the different makes of cards have different backs and underscreens that require different settings. On one card built in this country, the back can be set so as to take out practically no fibre underneath, only motes. The angle of the mote knife to the licker-in controls the amount of fly coming out under the licker-in more than does the screen to reduce the amount of fly. You should set the knife as straight up as possible, that is, keep the heel or bottom of the knife near the licker-in to get more slant on the knives so that the sharp edges point into the licker-in.

In this case, I would take out the licker-in, take the shield bearings off and put them in bearings on sides of card while they are in operation. Then set licker-in screen to them, using a 22-leaf gauge all around. Set back screen to cylinder to 17 gauge, bottom or middle to 34 and front to 1-16 inch. Set mote knives as straight up as possible, setting top knife to 10 and bottom knife to 12. Set feed plates to 17 gauge. See that there are no cracks under the card to let air under them and cause air currents. See that the wind breaks are set as close to the lap roll as possible.

Answer To Card Troubles

Replying to "Card Troubles" questions:

First—Where a doffer comb breaks, what causes the "little balls" that come out in the web? When the doffer fills because the sliver is not being combed off, the cylinder naturally fills up and the fibres are rolled into little balls. Between the cylinder and doffer wire they are pressed down in the wire on both sides, but pressed more into the cylinder than into the doffer. Then when the band is replaced when the sliver is combed off of the doffer—unless the card is stripped—there are many of these little balls left imbedded in the cylinder wire and they will continue to be thrown on the doffer and come out into the wire for an indefinite time. Just how long, I cannot say, as I have never let a card run long in that condition without stripping it. In my opinion, these little balls would continue to show up for several hours before the cylinder is clean enough to stop making them because they will be made as long as the wire on the cylinder is overloaded.

Second—Can a card manufacture some of these neps? Yes, because of improper card settings, dull wire on top flats and cylinders and by not stripping cards often enough. Dull wire will roll the fibre between the top flat and the cylinder, instead of the flats holding the fibres so the cylinder can card them, thus causing neps.

There is a tendency among "book taught" carders to have a fixed rule as to how many cards a grinder can handle each day, whether the wire is sharp or not. A card should be sharp even if it takes more than a day to get it sharp. A sharp card, fairly set, will do better work than a dull card set to perfection. You will seldom find neps in sliver that comes from a sharp card, so my advice is to get the card sharp and keep it so and you will be troubled with few neps.

Third—Why do soft places on the edge of the cylinders fill up sooner than the rest of the card?

This is because the wire has become loose on the foundation and has a tendency, we might say, "to lean back," throwing the knee of the wire out of proper angle. The wire "leaning back," will be lower than the rest, throwing it further away from the doffer, so that it will not shed as well as the higher and more closely set wire. Most of the soft selvages have oil soaked into the cloth or foundation, causing the wire to become sticky and a film of gum to form below the knee of the wire. This causes the fibres to cling to the wire and not shed properly. You can use a knife blade to pick the cotton out of a slack or soft selvage, or any selvage where the card has been improperly set and use a glass to see this film of oil on the cotton.

There is more damage done to card clothing by improper oiling than by any other one thing. I think one of the biggest mistakes made by carders is to let "Tom, Dick and Harry" oil cards. I contend that a card grinder should now have so many cards that he can't attend to his own oiling. If you do not let the grinders do the oiling, have a responsible man to do so. Never allow the card tenders to do the oiling.

As to the question on oiled cotton, I have not had much experience with this. I would think that the cards fill up quicker with the oiled cotton than when oil is not used. I base this opinion on clothing I have seen taken off and the cloth was oily and the film on the wire to a certain extent like the oily selvages spoken of above, but of course not nearly as bad as when the oil had gotten out of the cylinder bearings and onto the cloth.

Answering the last question, "Do the little ends of the seed and the seed coats stay in the cylinder better when using oiled cotton?" I think so, as there is a certain amount of fibe clinging to these bits of seeds which have a tendency to hold them. However, small bits of leaf, called "Black Pepper" by some carders strip off more easily with oiled cotton than with unoiled cotton. There is no fibre to hold them and they are greasy so they slip off more easily from the wire when the cotton is oiled.

L. L. D.

Editor:

I am enclosing my answers for two letters relating to carding.

(1) When a doffer band breaks, what makes little balls in web?

The comb band is then out of service. The web becomes a continuous lap around doffer, which increases the diameter of doffer with cotton and becomes congested to the extent that the velocity of surface speed of cylinder makes the little balls. This will be visible until card is properly stripped and you generally have to apply stripping roller several times before getting wire clean.

(2) Why do soft places, usually on the tail end of clothing, fill up quicker than the other?

The selvage end of clothing is not placed on with the same tension as the full width of the clothing and at this particular place on card it has a double duty to perform. The lap presented to the selvage end of clothing has a width of ½ to ¾ of inch folded by lap guides on feed plate and the licker-in has to work this cotton the same as the lap that is not doubled, which it will present to cylinder regularly.

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Master Mechanics Meeting in Gastonia

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woodpile for me to try to answer that question. From what point will you gauge this water per pound of coal? From and to what point, isn't that the point? And your question is too general. It is from what point or temperature of water to what point or temperature of water can you evaporate coal, and that depends upon your requirements. I hope that answers your question.

Mr. Toms: When you go to talking about evaporation per pound of coal per kilowatt hour, that brings on another thing to take into consideration. But I can give you what we are doing at our place with a KW plant. We are delivering a kilowatt between 1.7 or 1.75, kilowatt hour. Now, that is a small plant. Of course a man with a large plant can do more. We use 250 pounds of steam with 100 degrees superheat and our feed water is 228 degrees. Our control varies from about one degree in a day. We have about 100 per cent factor. And we have two slashers, and that is all the process we use in that. One is from the extraction from the turbine to control the feed water when it is not otherwise controlled.

Of course, other plants, larger plants, possibly do better than that. And we have a stoker fired boiler.

Now, I want to tell you about counting our coal. We have our coal chute, that is concrete and when I say that per kilowatt hour we take the invoice weight for it. We check it closely. There is a possibility you know that the floor measure might be wrong and the weight might be low, and then there is a possibility that the shippers might give you overweight. (Laughter.) But we take ours from this test and we take the floor measurements.

Chairman: Well, at this time I will ask Mr. Rowan to come up to the front, if he will. I want to say to all of you that I feel very fortunate in securing Mr. Rowan to discuss this feature of our program. Mr. Rowan is a man that is intimately qualified to do it. And we are going to give him 20 or 30 minutes to give it to us. Mr. Rowan, I am very glad to see you, glad to know you, sir.

The Chairman then presented Robt. L. Rowan, fuel engineer of the General Coal Company.

Before his talk Mr. Rowan distributed several charts. He described these charts as follows:

In a paper presented before a recent fuel engineers meeting of Appalachian Coals, Inc., by Howard N. Eavenson, the following charts were submitted:

The first chart shows the bituminous coal production in hundreds of millions of net tons from 1900 until 1934. This chart also shows a curve plotting the five-year average production, which smoothes out some of the irregularities of the first curve. This chart further shows the pre-war normal trend of production. It will be noted that from 1900 to 1920 bituminous coal production increased at a fairly uniform rate. From 1920 to 1929 the production curve is fairly level. From 1929 to 1932 there was a sharp decline and then from 1932 up there has been a slight increase. Had the production of coal followed this pre-war trend, the production of bituminous coal at this time would be approximately more than twice what it is now.

The second chart shows the performance of typical central stations of 60,000 K.W. capacity, and while it will be noted that in 1913 approximately 22,500 B.T.U.'s were required to produce a K.W. hour of net station output, in 1935 this has dropped down to slightly 12,000 above B.T.U.'s per K.W. hour. Steam generators of the mercury vapor steam cycle are producing a K.W. hour for 10,000 B.T.U.'s.

The third shows consumption of bituminous coal in the United States by railroads, utilities and steel works. Of particular interest on this chart is the curve showing pounds of coal per K.W. hour for the public utilities. It will be noted that in 1919 the average for the public utilities was slightly more than 3 pounds of coal per K.W. hour, while in 1934 the average has dropped down to slightly under 1½ pounds of coal per K.W. hour. Of course, there are several modern stations which are producing a K.W. hour for less than one pound of coal.

The next chart shows the annual of energy from mineral fuels and waterpower in the United States. This chart shows that the percentage of energy derived from coal has been consistently decreasing since 1918 and that of petroleum, gas and fuel oil, natural gas and water power has been slightly increasing.

Mr. Rowan: I thank you, Mr. Chairman. Gentlemen, I don't know as it becomes a speaker to get up and immediately start out to apologizing on what he is going to say but, I feel that shortness of time that I have had to prepare what I am going to say possibly calls for a little apology. However, I believe that I will make some remarks that are somewhat pertinent to the subject of your meeting.

My subject is: *Evaporation—Pounds of water per pound of coal and pounds of coal per kilowatt hour and what master mechanic can do to economically control these two primary boiler room factors.*

Evaporation in pounds of water per pound of coal is limited entirely to what takes place in the boiler room and is dependent upon (a) the character of coal used, (b) the type and condition of boilers, furnace and fuel burning equipment, and (c) upon the operating efficiency of the boiler room personnel. The pounds of coal per kiloatt hour is an over-all result of the combined efficiencies of not only the boiler room but also the turbine room. The results secured in the turbine room are usually expressed as the water rate of the turbine or, in other words, the number of pounds of steam consumed by the turbine to produce a kilowatt hour. This is dependent upon a number of factors: the type and condition of the turbine, the load factor, the pressure and temperature of the steam supplied to the turbine, whether condensing or non-condensing or bleeding type of turbine, voltage, phase and cycle of current being manufactured, and vacuum maintained.

The following data is taken from a test conducted at a multiple retort stoker fired plant approximately 10 years old:

1. B.T.U. of the coal as fired, 14,357.
2. Efficiency of boiler, stoker and furnace, 71.6%.
3. Actual evaporation, 9.25 lbs.
4. Steam pressure, 193 lbs. gauge.
5. Super-heat, 130 deg. F.
6. Feed-water temperature, 211 deg. F.
7. Water rate of the turbine, 15 lbs. per kilowatt hr.

From the data it is obvious that the pounds of coal per kiloatt hour equals 15/9.25 which equals 1.62 pounds of coal.

The records of another plant approximately two years old where pulverized fuel fired equipment was installed, disclosed the following:

1. B.T.U. of the coal as fired, 14,250.
2. Efficiency of boiler and furnace, 85%.
3. Actual evaporation, 10.6.
4. Steam pressure, 230 deg. F.
5. Super-heat, 150 deg. F.
6. Feed-water temperature, 212 deg. F.
7. Water rate of the turbine, 11 lbs. per kilowatt hr.

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Personal News

W. N. Rodgers has been promoted from the slasher room to second hand in weaving at the Judson Mills, Greenville, S. C.

W. A. Pridmore, recently with the Highland Park Manufacturing Company, Rock Hill, S. C., has been promoted to overseer of weaving at the Judson Mills, Greenville, S. C.

Allen F. Johnston, who has been vice-president and general manager of the Southern plants of Consolidated Textile Corporation, with headquarters at Lynchburg, Va., has been elected president and treasurer of the Florence Mills and American Spinning Company, Greenville. He succeeds the late D. D. Little. He is one of the best known textile executives in the South and has been with Consolidated since 1923.

Isaac L. Langley has been appointed Southern manager of the Consolidated Textile Corporation, with headquarters at Lynchburg, Va., to succeed Allen F. Johnson. Mr. Barnwell, who has been assistant to Mr. Allen for some time, received his B.S. and M.T. degrees from the Textile School of N. C. State College in 1923 and joined the Consolidated operating offices in that year.

Donald White has been appointed as representative for Borne, Scrymser Company, 17 Battery Place, New York City, in Texas, Kentucky, Louisiana, Arkansas, Mississippi and parts of Tennessee. Mr. White will market the well known Breton Minerol Process for spraying cotton; Meon for conditioning filling yarns; Meon-Q for conditioning garnetted cotton and other reclaimed fiber stocks; Versieol for textile finishing. Mr. White's address is 2269 Jefferson Ave., Memphis, Tenn.

L. E. Wooten, of Charlotte, has been appointed Carolinas representative for The Louden Machinery Company, Fairfield, Iowa, manufacturers of mono-rail systems, according to announcement made this week.

Mr. Wooten, who is widely known to the textile trade in the South, is vice-president in charge of Southern sales, of Lestershire Spool and Manufacturing Company, and in addition represents the following concerns in this territory: T. C. Entwistle Company, manufacturers of high speed warpers; The Allen Company, manufacturers of beams; and Mitchell-Bissell Company, manufacturers of porcelain guides and other supplies.

Walker With Charlotte Offices

The American Aniline Products, Inc., which recently opened offices at 219 South Mint Street, Charlotte, are also Southern selling agents for Aktivin Corporation, makers of Aktivin. Associated with A. S. Cooley, in the interest of the Aktivin Corporation, is Charles P. Walker, as technical representative.

Chas. P. Walker

Mr. Walker is a graduate in chemistry of Bradford Tech. (England) and has had over 30 years contact in a practical way with the textile industries, and is well qualified to render technical assistance, particularly in sizing and finishing, having made a special study of starches, their preparation and uses.

H. & B. Has Charlotte Office

The H. & B. American Machine Company, Pawtucket, R. I., announce the opening October 1st of offices at 1201-1203 Johnston Building, Charlotte, N. C. J. Walter Rimmer, who has been connected with the company for the past 26 years, will be in charge. Associated with Mr. Rimmer will be Fred Dickinson, of Rockingham, N. C., and Fritz Zweifel, who has been transferred from the Atlanta office.

J. Walter Rimmer

For over 40 years H. & B. preparatory and spinning equipment has been operated by numerous mills in the Carolinas. The opening of this new office will afford to present clients improved sales and field service, and prospective customers are assured of immediate attention to their requirements. This progressive step taken by the H. & B. Company will be favorably received in the trade as reflecting better days ahead for the textile industry.

In addition to offices in Pawtucket, R. I., and Boston, Mass., branch offices are also maintained in Atlanta, Ga., 814-15-16 Citizens & Southern National Bank Building, under the charge of J. Carlile Martin.

W. A. Briggs Appointed Southern District Sales Manager for Boston Woven Hose

Effective after October 1, 1935, Wm. A. Briggs will be in charge of the South sales district of the Boston Woven Hose & Rubber Co., with headquarters at Atlanta, Ga.

Mr. Briggs has been in the employ of the Boston Woven Hose & Rubber Co. for more than 30 years. Beginning in the manufacturing end of the business, he advanced rapidly to positions of importance in the sales division of the company and has at various times managed several different departments in the organization. His experience in the field, which includes a recently completed term of service in San Francisco and has entailed extensive traveling in practically all sections of the country, has given him a broad view of merchandising conditions and the various factors concerned with the distribution of the company's products.

W. A. Briggs

In his new location he will devote his time entirely to the building up of Southern distribution through the company's distributors, as well as the strengthening of the outside sales force and the development of field contacts.

Master Mechanics Meeting in Gastonia

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From these figures it would seem that the pounds of coal per kilowatt hour is 11/10.6 or 1.037 pounds of coal.

When comparing what the master mechanic can do to increase the efficiency of these two distinct steps in the generation of electric current, it is obvious there is a much more fertile field for intelligent and efficient work in the boiler room than there is in the turbine room, when one has to contend with existing equipment. Outside of pursuing proper operating instructions in the operating of the turbine there is little that can be done to increase efficiency. Proper operation is of course of the utmost importance, both from a reliability and maintenance viewpoint, but efficiency of turbine is governed in large measure by factors beyond the control of master mechanic in most plants. However, when the master mechanic steps into the boiler room there is generally room for improvement and in many cases, room for considerable improvement.

Under (a) listed above, character of coal used, there are a number of chemical and physical properties of coal that affect the performance of the plant in which used and the selection of coal to meet a given set of operating conditions is not an easy task. The complexity of this problem is indicated by the following chemical and physical properties of coal which vary among different producing areas, different seams of coal and different mines. These various properties affect the efficiency, capacity and operating cost of all steam plants.

1. B.T.U.'s (as shipped and as fired).
2. Moisture per cent.
3. Ash per cent.
4. Sulphur per cent.
5. Volatile per cent.
6. Hydrogen.
7. Fusion temperature of the ash.
8. Size.
9. Grindability.
10. Friability.
11. Coking or caking characteristic.
12. Character of clinked formed.
13. Ignition rate of the coal.
14. Uniformity of the above characteristics.

The individual plant will determine which of the above are of importance for its use. This will depend upon the equipment and operating conditions so that in one plant some of these properties may not be important at all while in others these same properties may be of the utmost importance. Among the above listed properties there are standard laboratory methods for determining the B.T.U.'s, percentage of moisture, ash, volatile, hydrogen, sulphur, fusion point and size consist. Methods are also in the development stage for determining the grindability and the friability, ignition rate of coal and considerable research work has been done in attempting to correlate clinker formation with fusion temperature of the ash.

The type and condition of boiler, furnace and fuel burning equipment, as listed under (b) above, varies greatly in different steam generating plants. The joint committee on fuel values of the American Society of Mechanical Engineers and the American Institute of Mining and Metallurgical Engineers, in a preliminary report, listed some of these plant characteristics, which may in their various possible combinations, determine the importance of certain properties of coal as mentioned above.

(a) According to type of coal burning equipment:

1. Hand-fired.
2. Stoker-fired.
3. Pulverized coal.

There are numerous variations in detail in the equipment avalable under each of these broad classifications and in addition, any two plants though identical in coal-burning equipment, may vary in one or more of the following:

1. Size or shape of furnace.
2. Amount and kind of water cooling surface in the furnace.
3. Available draft.

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A Different Bradley

THE late Joe Bradley, agent of the Merrimack Mills, Huntsville, Ala., was one of the outstanding mill men of the South and was held in great esteem by all who knew him.

In his dealings with his employees he was always considerate, but firm, and they loved and respected him.

In his dealings with other manufacturers he always gave a full measure of co-operation and also gave freely of his time in solving those problems which confronted the textile industry.

When Joe Bradley passed away the industry was pleased to learn that his mantle had fallen upon the shoulders of another Joe Bradley, his son and namesake, because they believed that the new Bradley would walk in the footsteps of his father.

It was not until union labor troubles appeared at Huntsville, Ala., that the textile industry learned that the young man was a different Joe Bradley.

From the beginning of the labor trouble, in that city, his policies have encouraged the labor organizers and made it difficult for the employees of the Merrimack Manufacturing Company and other Huntsville mills to remain loyal.

Last week there came the news that Joe Bradley had made a deal whereby the union would *permit* him to start the mill, and from the *Community Builder* of Huntsville, Ala., we quote:

One of the conditions upon which Merrimack Manufacturing Company is permitted to resume operation is, the mill agrees to discharge outright Clarence Baker, former overseer in the weave room, and J. J. Crowder, former overseer in the spinning room.

Instead of the owners of the Merrimack property cooperating with the Madison County Protective Association, they ignored the organization that had sought to aid them, went ahead and signed another one of those haphazard, subject to be broken at any time agreements, with the heads of union labor, and are going to attempt to resume operation by next Tuesday under the terms of an agreement entered into.

Can anyone who knew the Joe Bradley, who has passed, imagine his agreeing to discharge two loyal overseers upon the demand of any labor union?

It is our opinion that Joe Bradley the elder would have allowed the mill to rot down before he would have signed any such agreement, but apparently there is now a different Joe Bradley.

What will he or the Merrimack Manufacturing Company gain by any such agreement? The history of hundreds of similar cases answers—nothing.

The Naumkeag Mills of Salem, Mass., was for a long time operated as an open shop mill and during those years was exceedingly prosperous.

Upon the theory that, if they were a closed shop mill, labor union members throughout the United States would patronize Pequot sheets and increase the volume of their business, the Naumkeag Mills signed a closed shop agreement of union organizers.

Not only did their efficiency decrease and costs increase, under union rule, but they were weekly and almost daily subject to complaints and very soon found that they had no control over their employees.

In less than two years the employees themselves became disgusted with the interference of professional, but non-working labor leaders, and left the United Textile Workers to form an organization of their own.

Since that time there has been a constant fight between the leaders of the United Textile Workers, who need union dues for their salaries and expenses and the local union which has developed a dues collecting organization of their own.

The former prosperous and smoothly operating Naumkeag Mill has been rocked upon a sea of unrest and each quarter has shown a substantial loss. They have lived to bitterly regret signing the first closed shop contract with the union.

When Joe Bradley, the younger, so forgot the memory of Joe Bradley, the elder, as to sign an agreement to discharge two loyal overseers, he started the Merrimack Manufacturing Company upon a road that can only end in diaster and we also believe that it marks the beginning of his own end as a cotton manufacturer.

Communism Found At The University of Wisconsin

THE educators of Wisconsin heaped abuse upon the head of an editor of that State who dared charge that professors at the University of Wisconsin were using their class rooms for the purpose of inculcating Communistic ideas into the minds of their students.

For a long time the professors and the ultra-loyal alumni, the type who feel that it is their duty to defend everything and everyone connected with the institution, were able to prevent an investigation, but finally public sentiment was aroused to the point that the Legislature appointed a committee to investigate.

The committee has just made a report which says:

> Your committee found that, for several years past, the University was advertised extensively as an ultra-liberal institution, in which Communistic teachings were encouraged and where avowed Communists were allowed to spread their doctrines with the permission of the administration of the University.
>
> Your committee investigated these reports and found they were true to the extent that they were a matter of common knowledge. Meetings of local chapters of national and international Communistic societies were held in University halls.
>
> That it (the alleged sufferance of Communistic influences) was not a true picture of the great mass of the professors and students, who carried on in spite of un-American influences, speaks volumes for the good sense and patriotism of the people of this State.

Some day public sentiment will be aroused to the point that the Legislature of North Carolina will make an investigation of the University of North Carolina and their findings will be the same as those in Wisconsin.

We have often said that Communism and Socialism at the University of North Carolina was limited to a small group and that the great mass of professors and students carried on in spite of un-American and Communistic influences and that is exactly what was found at the University of Wisconsin.

The "daddy rabbit" of Communistic and Socialistic teachings in the United States is Columbia University, but not far behind it stands Harvard University, Chicago University, University of Wisconsin and the University of North Carolina.

None of them could stand the test of an impartial investigation, and since Dr. Chase has become president of New York University it is a safe bet that it will soon rank in radicalism with those named above.

Until the Legislature of Wisconsin made the investigation there was absolute denial that anyone connected with the University was affiliated with Communism.

Aided by The AAA

THE following rather remarkable figures, showing imports into the United States, are gleaned from a recent report of the U. S. Department of Commerce:

	Year Ending May, 1934	Year Ending May, 1935
Wheat	148,000 bushels	12,826,000 bushels
Barley	29,000 bushels	10,804,000 bushels
Corn	167,000 bushels	14,305,000 bushels
Oats	136,000 bushels	15,209,000 bushels
Cottonseed Cake	2,424,000 pounds	101,055,000 pounds
Butter	689,000 pounds	20,956,000 pounds
Hay	2,000 tons	85,000 tons

It would appear that farmers abroad are greatly benefitting by the AAA. Foreign farmers are producing wheat, corn, etc., with cheap labor and selling them in the United States in competition with American farmers whose cost of production and cost of living have been advanced by the New Deal.

Current Events is responsible for the following story:

> A large St. Louis mixed feed concern, located in the heart of the corn belt, has been buying Argentine corn for several of its middle west mills. After grinding and mixing this Argentine corn is being sold as poultry food to the middle western farmer, who under an AAA contract may have plowed under his own.

Bars Japanese Light Bulbs

WE note with much interest the following newspaper dispatch:

> Los Angeles.—Japanese electric light bulbs were barred from this country in a decision rendered by Judge Paul McCormick in Federal Court in favor of the General Electric Company in an action against a group of Japanese distributors.
>
> The decision, of far-reaching importance to American industry, shuts off one of Japan's prime export markets in the United States, stopping an annual sale of about 100,000,000 light bulbs.
>
> In three suits filed by the General Electric Company in the United States District Court early in 1933 it was charged that the Japanese lamps were sold at reduced prices, were of short life, used more current than those of the American electric lamp industry and violated the General Electric's patent rights.

The suit of the General Electric Company was based partially upon the infringement of patents and we do not know that anything can be done to prevent the importation of low priced Japanese cotton goods, but there is some satisfaction in knowing that manufacturers of electric light bulbs have been able to obtain protection.

Mill News Items

COLUMBUS, GA.—The Muscogee Manufacturing Company have installed the Borne, Scrymser Company process for conditioning cotton.

SILURIA, ALA.—Buck Creek Cotton Mills have placed orders with Borne, Scrymser Company, New York, for cotton conditioning equipment.

GASTONIA, N. C.—Many additional operatives have been added to the payroll of the Firestone Cotton Mills during the past week or ten days. Quite an additional number have been given work on housing projects in connection with remodeling of the Firestone dwellings in the older community.

LAFAYETTE, GA.—Industrial plants in Walker County are running full time with the exception of the Consolidated Textile plant at Lafayette, which has been closed since July. The Richmond Hosiery Mill at Rossville, which has been running on short time during the summer, reports increased business. The plant is operating better this season than it has in the last three or four years.

HICKORY, N. C.—Hosiery mills of Hickory are operating on full time and are said at present to be leading all manufacturing concerns in Hickory in the amount of business being done. According to reports from an authentic source, the hosiery mills are distributing the largest payrolls as a whole in the city among the manufacturing trades, and are employing more persons than any other manufacturing industries in Hickory.

CONCORD, N. C.—Plans of the Concord Knitting Company to double its output of pure seamless silk hosiery within the next 12 to 18 months were disclosed here. Work already has been started on a two-story brick-and-steel addition to the present plant which will double the mill's floor space. The cost will be approximately $8,000.

By doubling the mill's output, it was learned, the management will create about 150 new jobs after the machinery has been installed. The mill now employs between 150 and 160 operatives.

HENRIETTA, N. C.—According to an announcement made by the officials of the Henrietta Mills Company, operating textile units here and at Caroleen, the mills will operate on a 40-hour schedule this week.

Since the latter part of February the two mills, the biggest mills in Rutherford County, have been operating on a curtailed program. During this period the two mills were idle several weeks. Later they began running every other week on a 20-hour basis and for the past few months have been operating on a 20-hour week basis.

WADESBORO, N. C.—Thomas C. Cox, of Wadesboro, representing a group of associates, purchased at auction the properties of the Wadesboro Cotton Mill Company. The purchase price was $20,100.

The Wadesboro Cotton Mill was built 44 years ago and is equipped to manufacture yarn. It operated on a part-time basis until about four months ago.

The property purchased consists of 30 acres of land, 53 cottages and the mill building and machinery.

Mr. Cox said he had no announcement to make yet regarding future operation of the plant.

Mill News Items

GLASGOW, VA.—The Blue Ridge Company, Virginia subsidiary of large Pennsylvania rug manufacturing interests, has begun production, with a force of approximately 100 workmen, although less than hauf of the machinery has been installed in the new plant.

The first order was filled by the plant last week. Between 200 and 400 men and women, most of them local workers, will be employed when full operations are begun, Earl B. Morgan, company official, said. Only local labor will be used.

The plant was located at Glasgow after a group of citizens at Keswick, Va., had protested the proposed location of the plant in that community.

CLINTON, S. C.—The Lydia Cotton Mills of this city, following the recent reorganization, has called a special stockholders' meeting to be held at the offices of the company on Friday, September 27th.

Announcement is made that the purpose of the meeting is to issue for each share of the present common stock one share of the new no par value common stock; to provide for the issuance of 7,500 shares to take care of the indebtedness of the company of new preferred 6 per cent cumulative stock, and to consider and act upon amendments to the by-laws of the company in order that they shall conform to the provisions of the plan of reorganization as same shall be confirmed by the Federal District Court of the Western District.

Georgia Group To Meet

The fall meeting of the Textile Operating Executives of Georgia will be held in the Chemistry Building of the Georgia School of Technology in Atlanta, Ga., on Saturday morning, September 28th, beginning at 9:30 a. m., Atlanta daylight saving time.

R. D. Harvey, assistant agent, Pepperell Manufacturing Company, Lindale, Ga., is general chairman of the organization. The annual election of officers will be held at this meeting.

Slashing and weaving subjects will constitute the practical discussion, which will comprise the major portion of the meeting.

V. J. Thompson, superintendent Callaway Mills, Manchester, Ga., will conduct the slashing discussion, and Allen Jones, superintendent of the Muscogee Manufacturing Company, Columbus, Ga., will lead the discussion on the weaving questions.

The meeting will be adjourned before luncheon after one morning session.

The questionnaire of the practical subjects to be discussed follows:

SLASHING

1. We understand some mills have removed the hoods from over the slasher cylinders, and would like to know the reasons and results; also what method is used for ventilating the room, and removing the steam or vapor naturally arising when the warp passes over the cylinders.

2. (a) How often should the squeeze roll be re-covered in regular slasher operation? (b) Do you remove slasher cloth from rolls over the week-end and leave in water; if so, why? Does this increase the life of cloth? (c) In putting on new cloth, do you put the new cloth on top, or underneath with the old cloth brought to the surface? Why?

3. What do you consider is the proper speed for your

slashers? State yarn number, number of warp ends to set, whether you have temperature control equipment, etc.

4. We would like a clear explanation of the new Saco-Lowell stretch control on a slasher. How much increased loom production is secured by its use as against the old practice? Does the cloth increase in breaking strength in the warp; if so, how much?

5. What variation in number of cuts or yards, from various sets, should be expected? Please give number of yards per set and actual cuts or yards measured from various sets. What are the causes of this variation?

6. What percentage of moisture and solids should be left for best weaving results in warps? State yarn number, whether white or colored, construction of goods, etc.

WEAVING

1. What are the best methods for holding weave room temperature to a minimum during extremely hot weather —(a)-Manipulation of windows—top opening or bottom opening; (b) Temperature of water in humidifiers; (c) Automatic controlled ventilating system.

2. What is average life of your shuttles—express in loom hours? State class of goods, width and speed of looms, etc.

3. What method do you use in weave room for distinguishing the cloth woven by first and second shift weavers? What method of payment do you use?

4. How do you oil looms? Do you use red oil or compounded oil or both? When and where do you use either?

5. In cleaning looms with air, what is the best method to prevent blowing oil and grease on the cloth or warp?

6. What causes a streaky effect (filling bars) in high pick goods at the shuttle change?

Answers To Questions On Carding

(Continued from Page 11)

The machine builders should build a picker that will make a lap of ½ to ¾" less in width in order to eliminate the double edge on selvage of lap so it could be presented to card with the same evenness as other part of card. The manufacturers of clothing should experiment on making a clothing that would stand the same tension on half width of clothing as full width for a length of 13 to 15 feet in order to eliminate a weak point on selvage. The machine builders of cards could increase efficiency by making a cylinder with a flange as doffer but have flange on cylinder the height of clothing thickness of foundation so clothing could be placed on as on the doffer. All carders know we all have trouble at selvages. It becomes slack, loose and spongy and you cannot grind it as the other part of wire and you haven't a good point and cannot get one when this condition exists. Cylinder bearing should be watched and kept clean especially when they become spaced from journal of shaft that gives oil a free change to run to the clothing which decreases the strength of foundation. This causes clothing to become loose, spongy and wire to lose its stand, and there isn't good carding action.

(3) Can a card actually manufacture some of the neps that worry us?

Yes! If we could get a picking that wouldn't allow small rolls or curls in cotton and have licker-in made the same diameter throughout and could be in position not to have to run over 12 oz. lap nor card more than 90 lbs. in 10 hours. If we have clothing tight, mote knives without a defect, a back plate that would gauge evenly across card, flats all of same height, cylinder screws perfectly

fit, no high places in clothing, we could eliminate the most of our neps.

The oil now used in our carding process is a great advantage if the percentage is not too high. It increases the efficiency of carding, keeps dust down, keeps card clothing from rusting. The correct percentage of the oil should be checked daily.

Answer To Anxious

Fly Waste.

First, we must consider our mechanical parts that perform the duties of cleaning and the grade of cotton and the number of pounds that is produced, and the weight of the lap. We all know light laps, slow carding can be cleaned better.

If we have good screens, even surface licker-in, mote knives that will gauge across licker-in, I have found that a good setting for a dropping of 1½% is on 15-16-inch staple, oiled process is as follows:

Feed plate, 12.
Licker-in, 7.
Licker-in screen under quadrant gauge, 68.
Licker-in screen nose under quadrant gauge, ⅛.
Mote knives—top 7, bottom 12.
Mote knives angle 20 degrees.
Mote knives space from nose screen, 9-16.
Cylinder screen under quadrant as close as you can without rubbing licker-in.
Cylinder screen at back, 12.
Cylinder screen next to back, 34.
Cylinder screen middle, 58.
Cylinder screen front, ¼.
Back draft plate, bottom edge, 22.
Back draft plate, top edge, 34.

Flats—back 10, next 10, middle 10, next 10, front to 15, because this point is where faced clothing becomes visible. Insert a four-leaf gauge between top edge of stripping plate between cylinder wire and flats. Set to a snug 15 on belt side where flats drive. Have belt on at this setting and always use a belt of same length required.

Doffer, 7.
Doffer comb, 17.
And space cylinder screen on each side evenly so it will not be twisted.
Trusting I shall hear from the above information.

J. E. D.

The Future of the Textile Industry in New England

(*Continued from Page 8*)

33 1-3 per cent to the cost of raw material. Furthermore, its annual cost to the cotton mills is in the vicinity of 40 per cent of the industry's total wage bill. It also reaches a total of more than three times the sum of all other Federal, State and local taxes.

One of the objections to this tax immediately apparent is that all other fibres competitive with cotton were not simultaneously assessed; another objection is that it added so much to the cost of our merchandise that buying resistance has been caused to a great extent—to such an extent, indeed, that unsold merchandise has piled up, with consequent freezing of operating capital, and we have found ourselves placed in a position where, in most cases, extensive curtailment, and in many cases, complete shutdown of our plants has taken place. This of necessity has added to the ever-growing list of unemployed and has caused much suffering and distress among the employees of these mills. The processing tax is in fact nothing but a glorified sales tax. And if you will remember, at the close of the World War, Congress was assembled to devise ways and means by which money might be raised to pay the cost of the war. At that times a sales tax was suggested—but labor and its representatives said no tax on food or clothing would be tolerated, and in this they were sustained by Congress. But now, lo and behold, the processing tax comes! A tax on nothing but food and clothing—striking hardest those who are least able to bear it. We do not contend that the processing tax is the sole cause of our present condition, but it is one of the factors which are contributing largely to the serious position in which the cotton textile industry finds itself.

Now we come to the North-South wage differential, which in itself constitutes not only a severe penalty on the manufacturer but on labor as well. When the NRA was established and the Cotton Code of Fair Competition was adopted, it was understood and assumed by the Northern manufacturer that there would be a differential between the North and the South of one dollar in the weekly wage. As time goes on, however, we find that this one dollar differential applies in the South to the minimum only, and that the differential in the upper brackets, wherein come skilled and semi-skilled operatives, brings the average to two dollars and fifty-six cents per person employed in those mills. Therefore, a mill employing one thousand people in the North has placed against it a handicap of twenty-five hundred sixty dollars per week, and in a year of fifty weeks, this amounts to one hundred twenty-eight thousand dollars.

We, as manufacturers, contend that where the products of any industry—and especially, the textile industry—are sold in a common market, there should be no differential in wages, no matter where the product is made. For example: take a train leaving Boston to go to Miami. Who would contend that the working crew of this train should be paid a different rate in the different States through which it passes? Therefore, it is our claim that the same price should be paid for labor in textile products, whether they are made in Massachusetts or in Georgia—or in any other State; and we also contend that any other ruling would be unfair to that locality wherein a decent standard of living is maintained.

In presenting our case to the President through his Cabinet Committee, asking that this injustice be corrected, we pointed out to them that it was their duty to decide whether or not the standard of living for textile

workers is to be established on the low level prevailing in some places or on the higher level of the standard of living in New England. And in deciding this question, they must be prepared to assume the full responsibility, because it is apparent that if the textile industry is to survive in New England, competitive prices must be met.

Added to the burdens of the processing tax and the North-South wage differential, we now must face the new danger arising from the importation of foreign goods—especially those of Japan, which are made under an extremely low standard of living and a wage rate that pays their operatives for a full day of ten hours the amount a New England worker is paid for but one hour. If foreign goods are to come in, let them come in only on a parity with our own goods, and let merit win. And let it be remembered that every yard of goods or any other article that comes in, deprives American labor of just that much work. The American manufacturer is always willing to stand or fall on the quality of his merchandise, all else being equal.

It has been said that the yardage coming into this country is of but small importance. We agree that it is but a small percentage of the country's requirements; but it is the price at which these goods are coming in that causes the extreme danger—a price much below the cost of American goods, thereby establishing a market price which if met by the New England manufacturer means not only a sure death but a quick one to our industry. And again we ask the Administration to take the necessary steps, using any of the methods which the President may prescribe to safeguard the interests of American industry and American labor.

Now let us consider over-production. This today is a problem of overcapacity in relation to consumptive demand. The development of overcapacity in the industry has been not so much to excessive machinery installation as to the growing practice of increasing the running time of this machinery. During the war, demands for cotton products led to a widespread and increasing use of two shifts. These two shifts, in many parts of the industry, were long shifts sometimes aggregating 120 hours per week. With the birth of the NRA it was decided to limit all shifts to 40 hours per week, permitting all companies to run two shifts. Immediately there was begun a production which now exceeds the demand. This industry was built on a one-shift basis, and if you will take the Federal figures as a guide, you will readily see the benefit that might be derived from returning to the single shift of a reasonable number of hours weekly. In 1920 there were in place in this country 36,724,996 spindles, and our population was 105,710,620; whereas, in 1934 the spindles in place were 30,889,484, and we are told that our population is 126,000,000. Therefore, I contend that on a single shift basis, not only would our mills be running steadily, but many would be in full operation, giving employment during daylight hours to those now working during the night, paying dividends in happiness to the community in which our mills are located as well as to the stockholders of the companies.

We here in New England believe that with the removal of the processing tax which we think is not only unjust but unconstitutional; with the restriction of foreign imports at prices below the cost of American production; with the adjustment of supply to meet the demand; and with the equalizing of wages to afford the textile worker a decent living wage irrespective of where he lives—the New England textile industry, as well as other industries in this section, will again regain place in the industrial world, and a fair share of the country's prosperity will again be hours.

Index To Advertisers

Where a — appears opposite a name it indicates that the advertisement does not appear in this issue.

Mills Return To 80 Hours

Greenville, S. C.—Four large cotton mills in the Piedmont area have increased operations from 60 to 80 hours a week following recent improvement in sales volume.

Announcement was made that plants of the Victor-Monaghan, Woodside, Easley, and Brandon Mill Corporations had resumed 80-hour week schedules after running two 30-hour shifts during the summer.

The Brandon officials, however, said their action was more to provide work than because of any increased demand for cotton goods.

The Conestee Mill, closed for several weeks, resumed operations this fall.

All cotton carding and spinning machinery at the Slater Mills, in Greenville County, is due to be disposed of under a change there to make the plant entirely a rayon factory. It is now 75 per cent on rayon.

An increase in the present force of 425 operatives is expected under the change.

Master Mechanics Meeting in Gastonia

(*Continued from Page 16*)

4. Amount of heating surface exposed to radiant heat.
5. Maximum load.
6. Duration of maximum load.
7. Character of load.
8. Coal handling and storage facilities and requirements.
9. Spare units available.
10. Competence and adaptability of boiler room personnel.
11. Air-cooled walls.
12. Preheated air.

The variables above will affect furnace or fuel bed conditions by determining:

1. Rate of fuel feed.
2. Temperature of fuel bed.
3. Temperature of furnace.
4. Length of flame travel.
5. Heat release (B.T.U. per cubit foot furnace volume per hour).

"Depending upon the particular combination of these factors in a given plant, coal qualities may limit (a) efficiency, (b) operating costs, and (c) capacity."

Continuing further, this report stated—"the number of possible combinations of these plant characteristics is almost limitless and for that reason there are scarcely two steam plants of any size which can be said to be identical from a coal selection standpoint. Two plants may even be built from the same design, identical in every physical detail and yet coal selection for them will radically differ because of difference in load.

When large numbers of plants are analyzed, however, they will be found to fall into certain broad classes, for each of which a certain combination of coal qualities is desirable but the individual plants within any one of these classes would not necessarily be grouped together, if their similarity were to be judged merely by a list of the equipment installed. That is why coal consumers and coal salesmen are often misled to make a mistake in assuming, because a certain coal is successful in one plant, it will be equally successful in another plant which is superficially the same."

It has been said that the best way of determining the relative value to any plant of a particular coal is by trial of that coal in the plant. It is, of course, possible that the facts derived from such trials, together with a knowledge of the chemical, physical and burning characteristics of the coal can definitely determine the most economical fuel to use. In fact this trail and error method of selection, in which the master mechanic acts as judge, basing his conclusions upon the results obtained, is a more reliable and satisfactory basis for selection of coal than the method wherein the buyer bases his selection on the proximate analysis and calorific value. The proximate analysis and calorific value give important information and are useful in checking shipments of the coal which has been found to give satisfaction, but by themselves are inadequate indices of the ability of a coal to meet given requirements. At first glance the simplicity of settling the question of the relative value of two coals by using them is quite logical and provided the proper facilities are available for proper tets and the master mechanic has enough fundamental knowledge of the steam generating process than through a rational interpretation of the test data, economical and fundamentally sound engineering results will be secured.

There are pitfalls, however, to this type of test, as it is apparently quite conclusive. It must be remembered that engineers experienced in boiler tests recognized that even under the most favorable conditions, with extreme care in all measurements, even with tests of long duration, there is a probable error of at least 2 per cent and probably the majority of coal tests by this method are conducted under conditions with an error twice as great. The result is that in evaluating the coal, differences in coal valuations are being established which are in many cases errors in observation of test results. These factors must be taken into consideration when evaluating coals by the trial and error method, as determined by practical tests.

In many cases trials are made without instruments for accurately measuring the steam generated and the coal burned and depend entirely upon personal observation. Such tests are incapable of disclosing a difference in value of as much as 10 per cent and yet that is equivalent in many places to about 50c per ton. On the other hand, a small actual difference of only a half pound in evapora-

(*Continued on Page 30*)

Cotton Goods Markets

New York.—The cotton goods markets were again active last week, buying being particularly large the last two days of the week. Gray goods were sold freely in numerous constructions. Sales of finished cotton goods also showed a marked increase.

Aside from that sale, business in print cloths was good during the week and was estimated to have exceeded 10,000,000 yards. Sales of print cloth yarn goods for the week were easily 150 per cent of production, even considering some moderate increases in production schedules which developed during the week.

Sales of very good quantities of carded broadcloths were reported during the week, with prices unchanged at 6¾c for the 80x60s and 8¾c for the 100x60s. The business on 100x60s was in better volume than had previously sold at this level. The 80x80s sold in larger amounts than had been booked for some weeks.

Sheeting sales continued active, with prices tending firmer. While non-feeler 40-inch 2.85-yard 48 squares were sold at 9c, the sales were reported to have involved a relatively new make which has not yet built up acceptance throughout the consuming markets.

The fine goods markets continued strong, with moderate sales going through, but with some resistance shown to higher quotations on certain constructions. The sales of fine goods for the week were in excess of production in most divisions, and in a few numbers buyers were finding it difficult to get even nearby contracts, with spots out of the question.

Prices, although higher, have not advanced sufficiently to attract new production of such cloths as lawns, sateens and certain materials. Sales at retail continued good throughout the country.

Wholesalers bought more freely against improving demand from retailers. Prices were a little firmer in gray goods, and some advances developed in finished goods. A number of miscellaneous finished cotton items also were advanced.

Print cloths, 27-in., 64x60s	5
Print cloths, 28-in., 64x60s	5⅛
Gray goods, 38½-in., 64x60s	6¼
Gray goods, 39-in., 80x80s	8⅝
Gray goods, 39-in., 68x72s	7½
Brown sheetinfs, 3-yard	9¼
Brown sheetings, standard	9¾
Tickings, 8-ounce	19
Denims	15
Brown sheetings, 4-yard, 56x60s	7¾
Dress ginghams	17¼
Staple ginghams	10

Cotton Yarn Markets

Philadelphia, Pa.—The demand for cotton yarns showed improvement during the week and sales were larger. Some very good orders for carded knitting yarns calling for delivery through the rest of the year were reported. Dealers stated that prices were stronger, but that current quotations showed virtually no change. Many spinners are well sold for nearby deliveries and are working into a much stronger position. Prices are expected to show further advances very soon.

A more extensive movement of cotton goods in retail channels and bare shelves of manufacturers, distributors and retailers are creating a strong demand for yarns of all types and giving purchasers of sales yarn confidence to buy further ahead than has been seen. Purchases to the end of the year, with exceptional cases of next April, are reported, but bulk yarn business continues to be for nearby to two months ahead.

Small to moderate amounts of weaving yarn are required for which buyers have continued to pay what amount to fixed prices in the carded division. First hand stocks have been reduced to safe limits, the consequence being that buyers are not likely to find stocks accumulating to the point of breaking down values. It is the determination of spinners to keeup up this condition for as long as possible. A number see an opportunity to break even on production costs or to make a profit on sales. At times there is the suspicion that careless spinners may consider it advisable to make up more yarn than they can sell. Caution is represented in the practice of spinners to run three or four days a week without taking the position that the present busier period justifies them running full.

All type yarns with the exception of mercerized counts are selling well at present, with notable demand being reported in carded weaving and single combed. The latter is being sold at the best rates this year, with quite a few knitters willing to cover further ahead. There are numerous contracts calling for delivery to the end of this year and instances of next spring shipment.

Deliveries on combed peeler yarn are being taken well and prices on new business are well maintained by most sources. Most spinners are keeping their production well in line with shipments.

Southern Single Skeins	
8s	27 -...
10s	27 -...
12s	27½-...
14s	28 -...
20s	30 -...
26s	32½-...
30s	34 -...
36s	38 -...
40s	40 -...
Southern Single Warps	
10s	27 -...
12s	27½-...
14s	28 -...
16s	28½-...
20s	30 -...
26s	32½-...
30s	34 -...
40s	40 -...
Southern Two-Ply Chain Warps	
8s	27 -...
10s	27½-...
12s	28 -...
16s	29 -...
20s	30½-31
24s	32½-...
26s	32½-...
30s	35 -...
36s	39 -...
40s	41 -...
Southern Two-Ply Skeins	
8s	27 -...
10s	27½-...
12s	28 -...
14s	28½-...
16s	29 -...
20s	30½-...
24s	33½-...
26s	33½-...
30s	35 -...
40s	41 -...
40s ex.	42 -...
50s	50 -...
Duck Yarns, 3, 4 and 5-Ply	
8s	27 -...
10s	27½-...
12s	28 -...
16s	29 -...
20s	30 -...
Carpet Yarns	
Tinged carpets, 8s, 3 and 4-ply	23½-25
Colored strips, 8s, 3 and 4-ply	25 -...
White carpets, 8s, 3 and 4-ply	26½-27½
Part Waste Insulating Yarns	
8s, 1-ply	23 -...
8s, 2, 3 and 4-ply	24 -...
10s, 2, 3 and 4-ply	25½-...
12s, 2-ply	26 -...
16s, 2-ply	28 -...
20s, 2-ply	29½-...
Southern Frame Cones	
8s	26 -...
10s	27 -...
12s	27½-...
14s	28 -...
16s	28½-...
18s	29 -...
20s	29½-...
22s	30½-...
24s	31½-...
26s	32½-...
28s	33½-...
30s	34 -34½
40s	40 -...

Master Mechanics Meeting in Gastonia

(*Continued from Page 27*)

tion can mean several thousand dollars in the average annual fuel bill of even a comparatively small plant.

A market survey recently conducted by Appalachian Coals, Inc., covering 7,284 industrial plants with approximately 15,000 coal-burning units and annually consuming over 19,600,000 tons of coal, disclosed that 48.1 per cent is burned on underfed stokers, 20.8 per cent hand fired, 16.4 per cent pulverized fired and the balance on underfed stokers, 20.8 per cent hand fired, 16.4 per cent pulverized fired and the balance miscellaneous types of fuel-burning equipment.

In view of the predominance of the underfed type of fuel burning equipment in general use, it will not be out of place to discuss this particular type of equipment a little in detail. Underfed stokers are divided into single retort and multiple retort types. The single retort type of stoker may be divided into two classifications; those that produce some fuel bed agitation other than produced by coal feed and those that do not. Multitple retort stokers may be divided into two classifications also; those that have overfeed sections and those that do not have overfeed sections, discharging direct to ash dumps from end of retorts. There are also a number of ash discharging devices, single and double pans, reciprocating and non-reciprocating aprons and single and double row clinker grinders. One could go on in much greater detail describing features peculiar to each individual make.

Of greater importance, however, is the degree of excellence with which each installation is engineered. Just to mention one of many factors—the visiting engineer continually finds the tendency to install stokers, both single and multiple retort with too small a grate area rather than with too large an area. In my opinion the four most important characteristics of a coal governing the application to these types of stokers are:

1. Fusion temperature of the ash.
2. Ash percentage.
3. Coke or caking characteristics.
4. Ease of igition or ignition temperature.

I will discuss only one of these characteristics at this time, namely: the coking or caking characteristic. Different coals have different coking or caking actions. Some form large porous coke masses which are easily broken up. Some form hard, dense coke masses that require considerable agitation to break up. Some form friable masses that are easily blown off the grate, causing excessive combustible carryover. Furnace conditions frequently affect the above actions, irrespective of the natural tendency of the coal itself. Pre-heated air on the one hand, water walls on the other; in a word temperature also affects these actions. This coking or caking action is also materially influenced with most coals by the size consist of the coal going into the stoker hopper. Coals with an excessive percentage of superfines; that is, size particles that will pass a 10 or 20 mesh sieve will be conductive to strong coking action in the fuel bed resulting in uneven fires and frequently reduce thermal efficiency and at times is even accountable for excessive clinker trouble. Efficient daily operation of the steam plant can be more easily controlled if the losses that occur during operation are measured, recorded and studied. Of course, the variation in losses accounts for the variation in evaporation and in this way those factors which affect evaporation can be controlled. As coal is burned in the furnace approximately 95 per cent of the potential heat in the coal is released and the majority of this heat so released is transferred to the water in the boiler through the medium of radiation, conduction and convection, the balance passing out the stack as sensible heat and unburned combustible with a portion passing to the ash pit as densible heat and unburned combustion plus a small amount lost in radiation. The losses to be studied for control purposes can be measured by the percentage of CO^2 in the flue gases and the temperature of the flue gases leaving the boiler.

The temperature of the flue cases are influenced by the cleanliness of the boiler both inside and out, by the design of the boiler both inside and out, by the design of the boiler and baffle arrangement and condition of baffle. The temperature of the gases leaving the boiler is also influenced to some extent by the percentage of CO^2 present. The percentage of CO^2 present is an index of the amount of excess air being burned with the coal and its proper mixture therewith. Percentage of CO^2 is effected by the even distribution of air through the fuel bed which is caused in part by the burning characteristics of the coal, proper control and adjustment of drafts and the efficiency of the fireman in maintaining an even fuel bed. In studying the records of CO^2 percentage, it is important to determine whether the particular percentage secured was the result of any one or all these factors. The maintenance of proper fuel beds, proper draft control and adjustments will result in uniform, high CO^2, which in turn means low excess air and a slow percentage of loss of combustible in the flue gases. Each individual plant with a given coal will disclose upon proper study, a certain maximum CO^2 that it is possible to maintain and any variations in this figure should be studied and the cause thereof eliminated. The flue temperatures can be controlled by keeping the surfaces of the boiler, inside and out, clean and the setting and baffles tight. This means proper water treatment to control scale formation and proper soot blowing to keep the fire side of the tubes clean. Under some conditions of load and coal characteristics, tube slagging may be an added feature which affects flue gas temperature as well as the capacity and efficiency of the boiler in general. If there is any tendency for the tubes to slag, this slag should be removed periodically with hand lances or other mechanical means.

If a careful and conscientiou study of the losses taking place in daily operation are carefully noted, studied and corrected as far as possible, the average efficiency of the boiler will be materially increased and this is one form of supervision to which the master mechanic can very profitably devote his time and ability. For the measurement of these losses a recording flue gas thermometer and recording CO^2 instrument are of course necessary and are vital to the efficient operation of any generating unit. For correcting the losses indicated by these instruments, draft gauges, suitable observation doors of the furnace and the proper training of the boiler room personnel are essential. In pulverized fuel firing one encounters the necessity of studying different coal characteristics from that of stoker firing. Here grindability and ease of ignition, along with percentage of ash and fusion temperature of the ash, are generally the most important characteristics. Various types of mills will give different performance of coals with different grindability. It might be mentioned in passing that the American Society for Testing Materials is attempting to formulate a standard laboratory test to determine the grindability of a coal. At the present time there are several methods being used; probably the most widely used at the present time is that developed by Hardgrove of the Babcock & Wilcox Co. Mill capacity, maintenance and power requirements are

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Classified Department

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Textile Plants Asking Tax Cuts

Columbia, S. C.—State Tax Commission officials revealed that approximately 20 textile mills already had appealed from 1935 property tax assessments fixed by the commission.

Commissioner J. P. Derham said the appeals were filed with the State Board of Tax Review for although the commission had made "very few increases" and had confined those largely to plants that were enlarged.

Cotton Mill Activity Gains During August

Washington.—The cotton spinning industry was reported by the Census Bureau to have operated during August at 76.4 per cent of capacity, on a single shift basis, compared with 73.5 per cent in July this year, and 76.8 per cent in August last year.

Spinning spindles in place August 31st totalled 30,014,944, of which 22,046,652 were active at some time during the month, compared with 30,110,078 and 22,312,384 in July this year, and 30,951,390 and 24,153,998 in August last year.

Active spindle hours for August totalled 5,545,241,375, or an average of 185 hours per spindle in place, compared with 5,157,527,985 and 171 in July this year, and 5,752,899,618 and 186 in August last year.

Spinning spindles in place August 31st in cotton-growing States totalled 19,333,046, of which 16,274,032 were active at some time during the month, compared with 19,340,858 and 16,265,210 in July this year, and 19,359,336 and 16,759,662 in August last year.

Active spindle hours in cotton-growing States for August totalled 4,323,341,849, or an average of 224 hours per spindle in place, compared with 3,977,811,450 and 206 in July this year, and 4,261,038,331 and 220 in August last year.

Active spindle hours and the average per spindle in place, in cotton-growing States, follow:

Alabama	391,655,964 and 204
Georgia	780,799,721 and 230
Mississippi	31,177,244 and 139
N. C.	1,221,227,720 and 199
S. C.	7,509,467,449 and 258
Tennessee	153,170,647 and 242
Texas	35,699,114 and 138
Virginia	156,479,017 and 240

Japanese Mills Use More Cotton

Washington.—Japanese textile mills used 85,000,000 more pounds of cotton the first half of the current year than they did during the corresponding period in 1934, according to a trade report to the Department of Commerce.

The following statement was issued to the press:

"Consumption of raw cotton by member mills of the Japanese Cotton Spinners' Association which account for approximately 98 per cent of the cotton spindles in the country totalled 835,553,910 pounds during the first half of the current year compared with 750,293,942 pounds during the corresponding six-month period of 1934, an increase of 85,270,068 pounds.

Consumption of American cotton in the mills of the association during the six-month period of this year totalled 419,410,598 pounds, while consumption of Indian and Egyptian cotton is placed at 339,803,343 pounds and 36,045,569 pounds, respectfully, the report states."

Southern Sources of Supply

For Equipment, Parts, Material, Service

Following are the addresses of Southern plants, warehouses, offices, and representatives of manufacturers of textile equipment and supplies who advertise regularly in TEXTILE BULLETIN. We realize that operating executives are frequently in urgent need of information service, equipment, parts and materials, and believe this guide will prove of real value to our subscribers.

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WOLF, JACQUES & CO., Passaic, N. J. Sou. Reps., C. R. Bruning, 1202 W. Market St., Greensboro, N. C.; Walter A. Wood Supply Co., 4517 Rossville Blvd., Chattanooga, Tenn.

Master Mechanics Meeting in Gastonia

(*Continued from Page 30*)

dependent upon the grindability of the coal and with some makes of pulverizers this dependency is much more pronounced than others. The type of furnace in which pulverized fuel is burned along with load determines in a large measure the requirements as to ash percentage and ash fusion temperature. With furnaces of ample water cooling surface, coals of quite low fusion temperature are being satisfactorily used and where these furnaces are equipped with suitable ash handling equipment coals with ash percentages somewhat higher than the average can be used, which, of course, has nothing to do with the relative economic value of the high ash against low ash coals.

In certain sections of the country there is considerable agitation for the installation of Diesel engine generators and the question of the relative cost of generating electricity with this type of equipment as compared with steam generating equipment. The advocates of the Diesel engine are very prone to stress the low cost of fuel for this type of equipment and it is undeniable that the fuel cost is very low with the Diesel engine. The fuel cost is, however, only one of a number of costs and in the case of the Diesel engine, is a minor percentage of the total cost.

The life of the Diesel engine is claimed to be 20 years whereas experience with those in service today indicates that the economic life of the Diesel is about 10 years. When interest, depreciation, labor and maintenance are added, the total cost of generating power is considerably higher than with steam generation.

One of the large public utilities in the West has some 74 engines in service, this particular utility having acquired these engines through the purchase of small privately-owned and municipally-owned electric light plants. Their records for the year 1934 in operating these 74 engines is illuminating.

Twenty-three engines of 382 average horsepower capacity of under 1,000 hours of operation showed the following cost per kilowatt hour:

Fuel	.56
Labor	.74
Depreciation	.29
Interest	4.11
Other expenses	.47
Total	6.17c

Eleven engines of 765 average horsepower capacity operating with 1,000 to 2,000 hrs. of operation showed the following:

Fuel	.45
Labor	.35
Depreciation	.73
Interest	1.02
Other expenses	.39
Total	2.94c

Thirteen engines of 421 average horsepower capacity operating with 2,000 to 4,000 hours of operation showed the following:

Fuel	.44
Labor	.29
Depreciation	.25
Interest	.62
Other expenses	.25
Total	2.05c

Seventeen engines of 385 average horsepower capacity operating with 4,000 to 6,000 hours of operating showed the following:

Fuel	.45
Labor	.35
Depreciation	.33
Interest	.47
Other expenses	.32
Total	1.92

Ten engines of 128 average horsepower capacity operating with 6,000 to 9,000 hours of operation showed the following:

Fuel	.92
Labor	1.44
Depreciation	.49
Interest	.68
Other expenses	.77
Total	4.30c

It will be observed from the above figures that when all of the factors entering into the cost of generating a kilowatt hour considered, the cost of generating electricity with the Diesel engine is considerably higher than that of generating electricity with steam generating equipment.

(*Continued Next Week*)

Announcing . . .

THE NEW ARMSTRONG'S *Extra cushion* SEAMLESS CORK COT

Made under the exclusive Armstrong* TUBULAR PROCESS, *this new cork cot brings you 6 definite advantages

TWENTY years ago, Armstrong pioneered the first cork roll covering for the textile industry. Since that time cork cot acceptance and cork cot improvements have gone hand in hand until now more than 25% of the nation's spindles are on cots made by Armstrong. With the introduction of the new Armstrong's *Extra Cushion* Seamless Cork Cot, an era of even greater roll efficiency and savings is offered.

* * *

Armstrong's *Extra Cushion* Seamless Cork Cot is vitally important to you because of these six definite advantages:

(1) *Spins better yarn*—The extra cushion and uniform density from end to end of this new cork cot provides a better line contact with the bottom roll at all times, thus insuring a stronger, more uniform yarn.

(2) *Reduces end breakage*—The "comeback" of the new extra cushion cot means less end breakage and better running work. Tests show a reduction of end breakage of from 20% to 50% as compared with other types of roll coverings.

(3) *Improves Monday morning start-up*—Thanks to the uniform density and end-to-end strength as well as to the extra cushion which insures better alignment under all temperatures and atmospheric conditions, this new cot is a big help to those mills with cold dry rooms at start-up time on Monday mornings.

(4) *Works satisfactorily on old frames*—Where equipment is worn or damaged—with steel rolls somewhat out of true—the extra cushion of this new cork cot takes better care of these irregularities and produces a quality yarn with a minimum of end breakage.

(5) *Handles more easily in changing numbers*—Because this new cot has little tendency to hollow out—and has no hard shoulders to prevent proper contact—mills making frequent changes of numbers will find it a distinct advantage. Any normal range of numbers may be handled without premature buffing.

(6) *Stands up under abuse*—The new extra cushion cot is stronger and tougher, and has more "comeback." For these reasons, it will not groove readily from hard ends and is less affected by top roll laps.

* * *

The six important advantages of Armstrong's *Extra Cushion* Seamless Cork Cot are made possible by an entirely new and different process of cork cot manufacture. An exclusive development covered by patents, Armstrong's new *tubular process* insures absolute control of cot uniformity from end to end and makes possible this extra cushion and strength. In addition, all operations are carried on in rooms in which both temperature and humidity are accurately controlled, thus insuring still greater uniformity.

A number of field tests conducted during the past two years have demonstrated the six advantages of this new cork cot. These tests have proved that the new extra cushion cork cot spins a better, more uniform yarn with less end breakage.

Today—write for complete details about these tests and about the new Armstrong's *Extra Cushion* Seamless Cork Cot.

Armstrong Cork Products Company

Textile Division, 921 Arch Street

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